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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/900,688	07/06/2001	Mustafa Pinarbasi	SJ09-2000-0199US1	6711

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INTELLECTUAL PROPERTY LAW OFFICE
1901 S. BASCOM AVENUE, SUITE 660
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EXAMINER

MAGEE, CHRISTOPHER R

ART UNIT	PAPER NUMBER
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2653

DATE MAILED: 01/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/900,688	Applicant(s) PINARBASI, MUSTAFA	
	Examiner Christopher R. Magee	Art Unit 2653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 18-43 is/are pending in the application.
- 4a) Of the above claim(s) 7-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 18-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/6/2001</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-6 and 18-43, in the reply filed on 10/28/2004 is acknowledged.
2. Claims 7-17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10/28/2004.

Drawings

3. Figure 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 23-26, 30, 36-39 and 43 are rejected under 35 U.S.C. 102(e) as being anticipated by Gill (US 6,674,616 B2).

- Regarding claims 23 and 36, Gill discloses a hard disk drive [30; Figs. 1-3], including at least one magnetic head [col. 5, lines 30-34; Fig. 6] including a spin valve sensor, having a read head [72] portion comprising:

- a magnetic shield layer (S1) [80] being fabricated above a substrate base;

- a first electrical insulation layer (G1) [76] being fabricated above said S1 layer;

- a spin valve sensor structure [74] being disposed above said G1 layer [76];

wherein said spin valve sensor structure [74] includes a seed layer [218,220] being fabricated above said G1 layer [74], a PtMn layer [212] being disposed above said seed layer [218,220] and at least one pinned magnetic layer [204] and at least one free magnetic layer [202] being disposed above said PtMn layer [74]; and

wherein said seed layer [218,220] has an upper surface comprised of NiFeCr [220] having an etched crystalline structure.

As the claims are directed to a magnetic head, per se, the method limitation(s) appearing in lines 8 to 9 of claim 23, and lines 9 to 10 of claim 36, can only be accorded weight to the extent that it/they affect the structure of the completed magnetic head. Note that “[d]etermination of patentability in ‘product-by-process’ claims is based on product itself, even though such claims are limited and defined by process [i.e., “*having an etched crystalline structure*”, for instance], and thus product in such claim is unpatentable if it is the same as, or obvious form, product of prior art, even if prior product was made by a different process”, *In re Thorpe, et al.*, 227 USPQ 964 (CAFC 1985). Furthermore, note that a “[p]roduct-by-process claim, although reciting subject matter of claim in terms of how it is made [i.e., “*having an etched crystalline structure*”, for instance], is still product claim; it is patentability of product claimed and not recited process steps that must be established, in spite of fact that claim may recite only process limitations”, *In re Hirao and Sato*, 190 USPQ 685 (CCPA 1976).

- Regarding claims 24-26 and 37-39, Gill discloses the NiFeCr layer is formed with a thickness of approximately 20 Å [col. 7, lines 47-50; Fig. 10], which encompasses the claimed range.

- Regarding claims 30 and 43, Gill teaches a spin valve sensor structure [74] includes at least one PtMn antiferromagnetic layer [212], at least one pinned magnetic layer [204] having a composition which includes CoFe, at least one spacer layer [200] having a composition which includes Cu, and at least free magnetic layer [202] having a composition which includes NiFe [Fig. 10].

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3, 18, 19, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gill (hereinafter Gill '0140 (US 6,430,014 B1) in view of Gill (hereinafter Gill '616) (US 6,674,616 B2).

- Regarding claims 1, 2, 18, 19, 31 and 32, Gill '014 discloses a hard disk drive [30; Figs. 1-3], including at least one magnetic head [col. 5, lines 46-49; Figs. 6 and 11] including a spin valve sensor [130], having a read head [72] portion comprising:

- a magnetic shield layer (S1) [152] being fabricated above a substrate base;

- a first electrical insulation layer (G1) [148] being fabricated above said S1 layer;

- a spin valve sensor structure [200] being disposed above said G1 layer [148];

- wherein said spin valve sensor structure [200] includes a seed layer [228,230, 232] being fabricated above said G1 layer [148], a PtMn layer [214] being disposed above said seed layer [228,230, 232] and at least one pinned magnetic layer [204] and at least one free magnetic layer [206] being disposed above said PtMn layer [214]; and

- wherein said seed layer includes an Al₂O₃ layer [228], and NiMnO layer [230] and a Ta layer [232] [Fig. 12].

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Gill '014 does not disclose a seed layer including a NiFeCr layer but teaches other seed layer materials may be desired [col. 9, lines 40-41].

Gill '616 teaches a seed layer, with a thickness of 20 Å, to include Ta or NiFeCr [col. 7, lines 47-50; Fig. 10].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the Ta layer of Gill '014 with a NiFeCr layer as taught by Gill '616.

The rationale is as follows: One of ordinary skill in the art at the time of the invention would have been motivated to substitute the Ta layer of Gill '014 with a NiFeCr layer as taught by Gill '616 because they are known seed layer materials that are used in spin valves and using them is merely a substitution of art recognized equivalents.

- Regarding claim 3, Gill '014 teaches a spin valve sensor structure [200] includes at least one PtMn antiferromagnetic layer [214], at least one pinned magnetic layer [204] having a composition which includes CoFe, at least one spacer layer [202] having a composition which includes Cu, and at least free magnetic layer [206] having a composition which includes NiFe [Fig. 12].

6. Claims 4-6, 20-22 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gill (hereinafter Gill '014) (US 6,430,014 B1) and Gill (hereinafter Gill '616) (US 6,674,616 B2) as applied to claims 1, 18 and 31 above, and further in view of Mao et al. (hereinafter Mao) (US 6,490,140 B1).

- Regarding claims 4-6, 20-22 and 33-35, Gill '014 and Gill '616 disclose all the features, *supra*, but do not show the composition of the NiFeCr layer as $\text{Ni}_{49.5}\text{Fe}_{12.5}\text{Cr}_{38}$.

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Mao teaches the composition of seed layer [12] is preferably in the range of $\text{Ni}_{60}\text{Fe}_{15}\text{Cr}_{25}$ to about $\text{Ni}_{48}\text{Fe}_{12}\text{Cr}_{40}$ [col. 4, lines 30-37], which encompasses the claimed range.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to manufacture the NiFeCr layer of Gill '014 and Gill '616 with a NiFeCr composition as taught by Mao.

The rationale is as follows: One of ordinary skill in the art at the time of the invention would have been motivated to manufacture the NiFeCr layer of Gill '014 and Gill '616 with a NiFeCr composition as taught by Mao in order to promote the texture and enhance the grain growth of the free layer or pinning layer consequently grown on top of the seed layer [Mao; col. 1, lines 55-61].

Additionally, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation and optimization in the absence of criticality. *In re Swain et al.*, 33 CCPA (Patents) 1250, 156 F2d 239, 70 USPQ 412; *Minnesota Mining and Mfg. Co. v. Coe*, 69 App. D.C. 217, 99 F2d 986, 38 USPQ 213; *Allen et al. v. Coe*, 77 App. D.C. 324, 135 F2d 11, 57 USPQ 136.

7. Claims 27-29 and 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gill (hereinafter Gill '616) (US 6,674,616 B2) as applied to claims 23 and 36 above, and further in view of Mao et al. (hereinafter Mao) (US 6,490,140 B1).

- Regarding claims 27-29 and 40-42, Gill '616 teaches all the features, *supra*, but does not show the composition of the NiFeCr layer as $\text{Ni}_{49.5}\text{Fe}_{12.5}\text{Cr}_{38}$.

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Mao teaches the composition of seed layer [12] is preferably in the range of $\text{Ni}_{60}\text{Fe}_{15}\text{Cr}_{25}$ to about $\text{Ni}_{48}\text{Fe}_{12}\text{Cr}_{40}$ [col. 4, lines 30-37], which encompasses the claimed range.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to manufacture the NiFeCr layer of Gill '616 with a NiFeCr composition as taught by Mao.

The rationale is as follows: One of ordinary skill in the art at the time of the invention would have been motivated to manufacture the NiFeCr layer of Gill '616 with a NiFeCr composition as taught by Mao in order to promote the texture and enhance the grain growth of the free layer or pinning layer consequently grown on top of the seed layer [Mao; col. 1, lines 55-61].

Additionally, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation and optimization in the absence of criticality. *In re Swain et al.*, 33 CCPA (Patents) 1250, 156 F2d 239, 70 USPQ 412; *Minnesota Mining and Mfg. Co. v. Coe*, 69 App. D.C. 217, 99 F2d 986, 38 USPQ 213; *Allen et al. v. Coe*, 77 App. D.C. 324, 135 F2d 11, 57 USPQ 136.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher R. Magee whose telephone number is (703) 605-4256. The examiner can normally be reached on M-F, 8: 00 am-5: 30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (703) 305-6137. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 13, 2005


Christopher R. Magee
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Art Unit 2653


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